



SMARTEH[®]
LIVING SYSTEMS

USER MANUAL

- ▶ Longo Touch Screen
LTS-2.PC3
7" Touch Screen

Version 2

Written by SMARTEH d.o.o.
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User Manual

Document Version: 2
January, 2018



STANDARDS AND PROVISIONS: Standards, recommendations, regulations and provisions of the country in which the devices will operate, must be considered while planning and setting up electrical devices. Work on 100 .. 230 V AC network is allowed for authorized personnel only.

DANGER WARNINGS: Devices or modules must be protected from moisture, dirt and damage during transport, storing and operation.

WARRANTY CONDITIONS: For all modules LONGO LTS-2 - if no modifications are performed upon and are correctly connected by authorized personnel - in consideration of maximum allowed connecting power, warranty of 24 months is valid from the date of sale to the end buyer, but not more than 36 months after delivery from Smarteh. In case of claims within warranty time, which are based on material malfunctions the producer offers free replacement. The method of return of malfunctioned module, together with description, can be arranged with our authorized representative. Warranty does not include damage due to transport or because of unconsidered corresponding regulations of the country, where the module is installed.



This device must be connected properly by the provided connection scheme in this manual. Incorrect connections may result in device damage, fire or personal injury.



Hazardous voltage in the device can cause electric shock and may result in personal injury or death.



NEVER SERVICE THIS PRODUCT YOURSELF!

This device must not be installed in the systems critical for life (e.g. medical devices, air crafts, etc.).



If the device is used in a manner not specified by the manufacturer, the degree of protection provided by the equipment may be impaired.

Waste electrical and electronic equipment (WEEE) must be collected separately!

LONGO LTS-2 complies to the following standards:

- LVD: IEC 61131-2

MANUFACTURER:
SMARTEH d.o.o.
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Longo Touch Screen LTS-2.PC3

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1 ABBREVIATIONS

SW	Software
Win CE	Windows embedded compact
LCD	Liquid crystal display
SD	Secure digital
LED	Light emitting diode
TS	Touch Screen
P/E	Program erase
VNC	Virtual network computing
SCADA	Supervisory control and data acquisition
HMI	Human machine interface
XML	Extensible markup language



2 DESCRIPTION

LTS-2.PC3 Touch Screen is 7" Windows CE device for supervising and managing of control systems. It can be used with user made proprietary SW or with available HMI packages, supporting Win CE. We offer Movicon developing environment and Movicon CE light licence.

Integration with logical programmable controllers, other device or management system can be realized through Ethernet, RS-485 or RS-232 connection. Movicon CE is limited to use two different communication drivers at a time.

Touch Screen is available in Aluminium Gray or Mate Black paint. Encased with aluminium frame allows flush wall or panel mounting. It is robust and so suitable to be used in a different kinds of industrial environments.



3 FEATURES

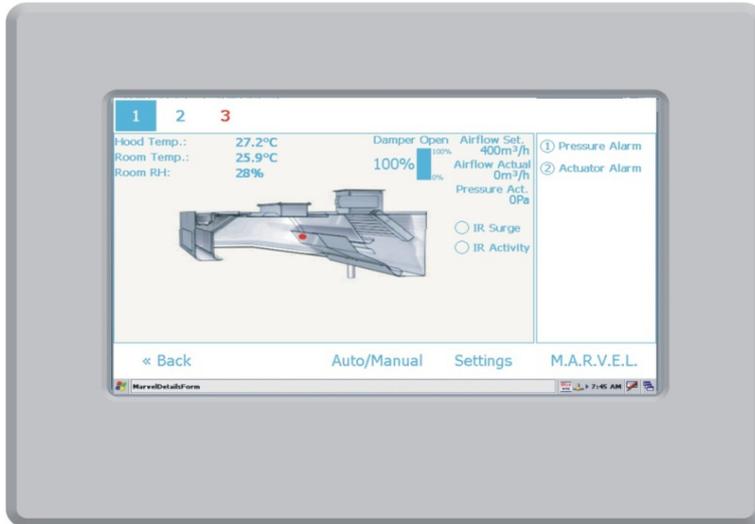


Figure 1: LTS-2.PC3

Table 1: Features

Type:	7" TFT LCD, 16:9, capacitive Touch Screen
Operating system:	Windows CE 6.0
Processor:	Samsung S5PV210 @ 1 GHz
Memory:	512M RAM on board
Storage:	micro SD card slot: 4 GB SD card included
Display:	800 x 480 pixels, 64 k Color, LCD display size 154 x 92 mm
Keyboard:	on screen (USB keyboard and USB mouse supported)
Connection to process:	1 x Ethernet, 1 x RS-232, 2 x RS-485
Power supply:	5.2 V DC, 1.2A external power supply
Signalization:	buzzer, LED on back
Programming:	Movicon CE preinstalled
OS downloading:	USB, RS-232, SD CARD
Application download:	to SD card using card reader, USB



4 OPERATION

Touch Screen is preset for automatic start of Program Movicon CE (2h demo, if license is not activated) and Movicon run-time is preset for automatic start of Smarteh sample application.

Basic setting like screen saver and touch calibration can be entered through Win CE 6.0 control panel. Application settings are part of developing environment. Using pre installed Movicon, application changes are to be made on developer workstation PC and then copied to Touch Screen SD card.

VNC server is also included in SD card and can be simply started using Run command from Win CE Start menu. It is advised to take care of IP settings before starting VNC server.

4.1 Storage content

IMPORANT: To ensure long-term operation of the Touch Screen, storage capacities must be used correctly, mainly due to wear of flash memory. Flash memory has a finite number of program-erase cycles. Flash products are guaranteed to withstand 100.000 P/E cycles, before the wear begins to deteriorate the integrity of the storage. After on-board flash wears out, Touch Screen is no longer operational. So it is advised to do all write intensive operations to removable SD card and NOT to on board NAND flash.

On board flash is to be used as operating system and registry storage. SD card is used for SW installations, application data, data logging and logs.

LTS-2.PC3 Touch Screen as shipped, has two storage devices accessible using windows explorer:

- **Storage Card** - with 4 GB SD card properly inserted

Content of **Storage Card** is basically as follows:

- **APPL** - folder holding Movicon application data
- **MovXCE** - folder holding Movicon CE Runtime program
- **VNC** - folder holding Windows VNC program for remote access to Touch Screen
- **MovCE.boot** - file in XML format specifying the path and name of the project to be run

Content of the SD card (**Storage Card**) can be backed up using card reader by simply copying the contents of the card to a backup space and back. Movicon license is not affected by changing the content of the SD card.

4.2 Note on HMI application

Project compatibility between desktop PC and target Touch Screen is one of the biggest advantages of using Movicon. Structure of the projects is XML based, which means all the same project files run on Win32/64 (and debugged using PC !) can be uploaded to the Touch Screen and run by the Movicon CE run-time engine. As a consequence, there is no need to compile the project file when uploading it from Desktop PC to CE device and project reverse engineering is no longer necessary. Considering resource limitations of CE platform, this approach makes project handling extremely simple.

More information about Movicon application development you can find in **Movicon CE Reference Guide** and other literature available from: <http://www.progea.com>.



4.3 Automatic start of Movicon after power-up or reboot

Automatic start of Movicon after power-up or reboot is set in the Win CE registry. It can be removed or changed using registry editor on the Win CE Touch Screen.

To access this setting, use **Start** → **Run** from the task bar, type **regedit** and click **OK**.

Path to the setting is:

- My Device
 - HKEY_LOCAL_MACHINE
 - init
 - Launch90 \Windows\MovXCE\MovCE.exe

The settings **Launch170** can be changed or deleted, if auto-start is not required.

4.4 Manual start of Movicon

If automatic start of Movicon is disabled, Movicon can be started manually, using

- **Start** → **Run** from the task bar
- Select **Browse** and then point to
 - \Windows\MovXCE\MovCE.exe
 - Click **OK** to start Movicon

Movicon will then try to run the project specified in the **MovCE.boot** "Boot File".

4.5 Selecting application program to be loaded at Movicon startup

When Movicon is started, it will search for the **MovCE.boot** file in the root of the **Storage Card** at its startup. The file specifying the path and name of the project file to be run should be in this file. The file is in XML format and is structured as follows:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<boot>
<filename>\Storage Card\APPL\APPL.movprj</filename>
</boot>
```

The **MovCE.boot** file is automatically created in the root of the compact flash after the project has been uploaded. This happens in automatic only when using the "MS Active Sync" option and by using a different plug-in programmed to manage this function.

If needed to create/change this file manually, just change the path and file-name (3rd row).

Every time on start or restart, Movicon will run the project specified in the **MovCE.boot** "Boot File" in the **Storage Card's** root.



4.6 Select and start the HMI application

On Win CE Touch Screen loaded application always starts, as there is no editor on the CE device. Changes can be made using (developer) PC with installed Movicon and then copied to the SD card.

When starting Movicon the pop-up for application selection will appear, if path/file-name defined in MovCE.boot is not found. Selected application will then start.

4.7 Stopping the HMI application

Normally HMI application on CE touch panel can be stopped using **File** menu on the top of the screen. In case of FULL SCREEN mode, user can not access menu, nor the task bar. In this case stopping command should be included in HMI application (responsibility of the developer).

Violent way to stop the application is to remove SD card and restart the Touch Screen using reset button on the back/top (marked **RST on circuit board**).

4.8 Preventing the application from starting

In case when application is using FULL SCREEN, user can not access Movicon menu, nor Win CE task bar to stop the application. In that case there are basically three possible solutions:

1. To put command for stopping Movicon inside HMI application, for instance as a button, possibly password protected
2. Changing path/file-name in **MovCE.boot** file using SD card reader
3. Changing the name of the HMI application folder (using SD card reader), so Movicon can't find application specified in **MovCE.boot** to auto-start with

4.9 Configuring and using VNC server

To configure VNC server choose:

- **Start** → **Run** from the task bar
- Select **Browse** and then point to **\Windows\vnccnfig.exe**

Click **OK** to start Configuration utility. Configure VNC server.

To configure IP settings of touch panel choose:

- **Start** → **Settings** → **Network and Dial-up** from the task bar and then
- double click on the **DM9CE1** icon
- Set LAN adapter IP settings

Also set network/firewall/Internet access settings to access Touch Screen from the Internet.

Start VNC server by choosing:

- **Start** → **Run** from the task bar
- Select **Browse** and then point to **\Windows\WINVNC.exe**

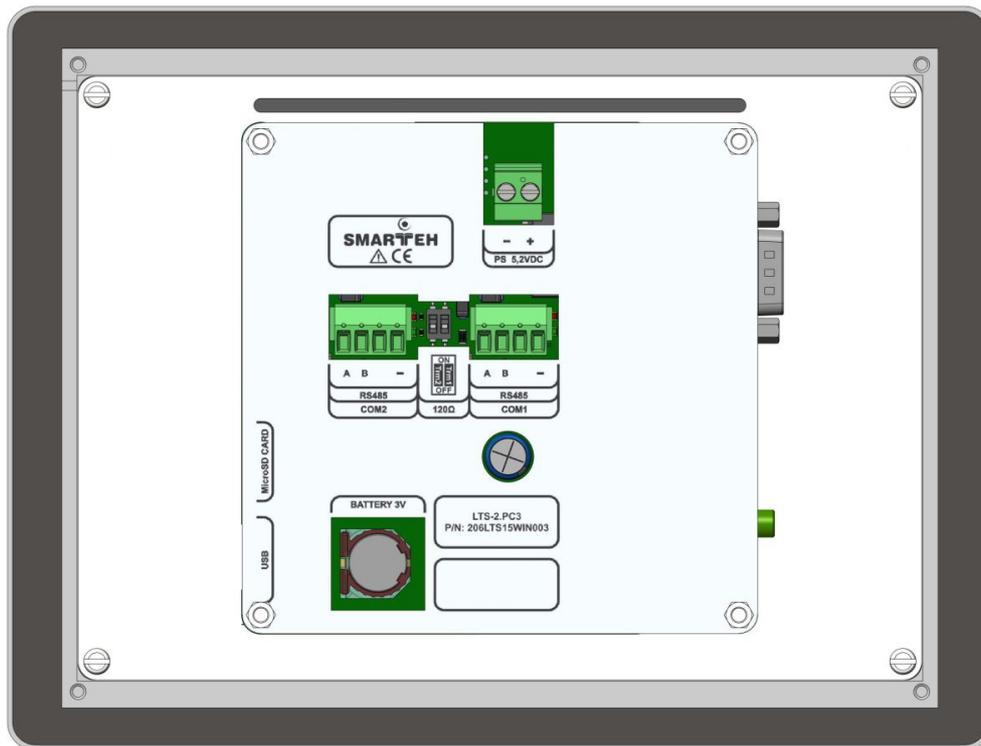
Note: It is also possible to start VNC server through HMI application, e.g. triggered with touch of the "start VNC" button on admin page.



5 INSTALLATION

5.1 Connection

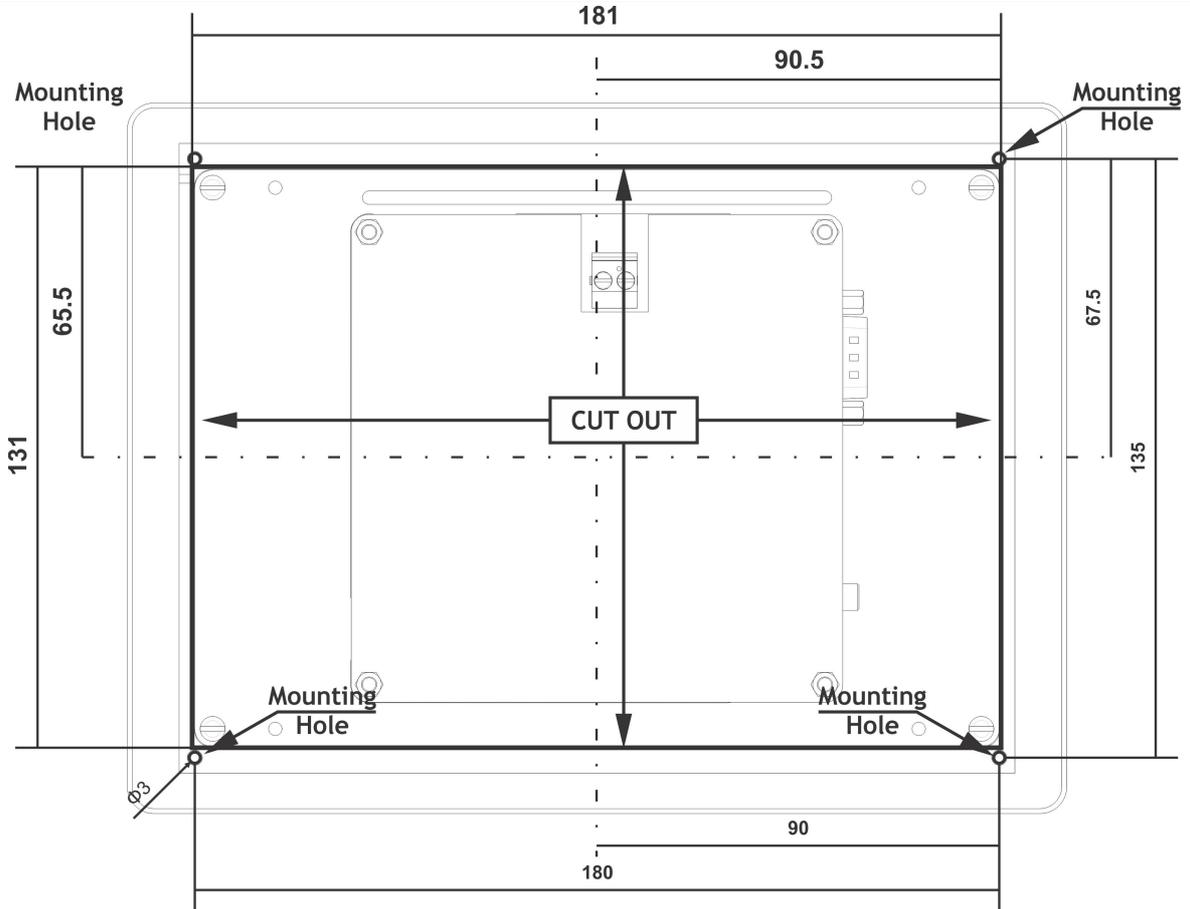
Figure 2: Layout of the connectors



5.2 Mounting dimensions

Drill four holes $\Phi 3$ mm (being 180 x 135.5 apart) for fixing the Touch Screen, and cut rectangular opening 181 mm x 131 mm to fit in.

Figure 3: Mounting dimensions



5.3 Module labeling

Figure 4: Labels example

Label 1 (sample):

LTS-2.PC3
 P/N: 206LTS15WIN003
 D/C: 01/15

Label 2 (sample):

S/N: PC3-S9-1500000012

Label 3 (sample):

MAC: 20-41-5A-1A-00-00

Label 1 description:

- **LTS-2.PC3** is the full product name
- P/N: 206LTS15WIN003 is the part number
 - 206 - general code for Longo Touch Screen product family,
 - LTS - panel short product name,
 - 15 - year of code opening
 - WIN - denotes OS installed (Win CE)
 - 003 - version code (increased future HW and/or SW firmware upgrades).
- D/C: 01/15 is the date code.
 - 01 - week and
 - 15 - year of production

Label 2 description:

- S/N: PC3-S9-1500000012 is the serial number.
 - PC3 - short product name,
 - S9 - user code (test procedure, e.g. Smarteh person xxx),
 - 15 - year (last two digits)
 - 00000012 - current stack number

Label 3 description:

- MAC: 20-41-5A-1A-00-00 is the MAC address of PC3 LAN adapter.



6 TECHNICAL SPECIFICATIONS

Table 2: Technical specifications		
Power supply		5.2 V DC, 1.2 A (optional LPS-2 power supply available)
Material	Front plate	Aluminum, painted in Gray or Mate Black
	Back	plastic cover
Dimensions (L x W x H)		160 x 210 x 55 mm
Detailed description		
Screen	Type	7" TFT, 16:9, capacitive Touch Screen
	Color	64 k
	Resolution	800 x 480 pixels
	Size	154 x 92 mm
Keyboard type		USB keyboard & mouse supported
Signalization		buzzer, LEDs on back
Operating system (supported)		Windows CE 6.0 (Linux, Android)
Processor	Samsung S5PV210	1 GHz
Memory		512 MB RAM on board SD card interface (SD 4 GB included)
Real time clock		on board, battery backup CR1220, 3 V
On board connectors	Communication	10/100M Ethernet (RJ-45 plug) 1 x RS-232 (DB9 plug) 2 x RS-485 (2 x 4pin disconnectable screw terminals)
	Multimedia support	audio input interface stereo audio output interface, CMOS camera interface USB camera supported
	OS & application downloading	USB, RS-232, SD CARD
Included SW		Movicon Win CE, VNC



Table 3: Environmental specifications

Power supply	5.2 V DC, 1.2 A external power supply
Power consumption	6 W maximum
Dimensions (L x W x H)	160 x 210 x 55 mm
Weight	850 g
Maximum altitude	2000 m
Mounting position	horizontal
Ambient temperature	0 to 40 °C
Ambient humidity	max. 95 %, no condensation
Transport and storage temperature	-20 to 60 °C
Protection class	IP 65 from front side





7 SPARE PARTS

For ordering spare parts following Part Numbers should be used:

LTS-2.PC3 Touch Screen	
LTS-2.PC3	P/N: 206LTS15WIN003



8 CHANGES

The following table describes all the changes to the document.

Date	V.	Description
15.01.18	1	General update.
15.01.15	1	The initial version, issued as <i>LTS-2.PC3 7" Touch Screen User Manual</i> .





9 NOTES

